Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

photometer and the polarimeter, are for the first time described in this book. The typographical appearance of the book is most inviting, and we trust that the second volume, relating to heat, electricity and other subjects interesting to the student of physics, will soon appear.

THE SPECTROSCOPE.*—The time is perhaps coming when the scientific world will be divided into two classes, *i.e.*, those who carry a microscope, and those who carry a spectroscope in their vest pockets. For what biologist can do without his microscope, or physicist without his spectroscope? This little manual tells us what the spectroscope is, and how it has been applied in discoveries that have transcended the wildest dreams of philosophers. Mr. Lockyer tells the story with such perspicacity and interest that though we had intended to simply glance through its chapters, we have not failed to read every word of it. Admirably clear and comprehensive in style, it is beautifully illustrated and very attractive in typography. It is the first of a library of scientific manuals to be published by Messrs. Macmillan & Co., under the title of "Nature Series."

BOTANY.

SENSITIVENESS OF THE LEAVES OF DIONÆA AND DROSERA.—At the recent meeting of the British Association for the Advancement of Science Dr. Burdon Sanderson read a paper on the electrical phenomena which accompany the contractions of the leaf of *Dionœa muscipula*. The contraction of certain organs of some plants on irritation, such as the leaves of *Drosera* and *Dionœa*, especially the latter, strikingly suggest a correspondence of function between them and the motor organs or nervous system of animals. A careful series of experiments made by means of Sir W. Thomson's galvanometer, fully confirmed the hypothesis of the existence of voltaic currents in these parts; the currents being subject, in all respects in which they have as yet been investigated, to the same laws as those of muscle and nerve. At the same meeting a paper was also read by Mr. A. W. Bennett on the movements of the glands of *Drosera*. These glands, which fringe the margin of its leaf and cover its upper side, have been shown by previous observers not to be hairs in the true sense of the term, *i.e.*, mere cellular expansions of the epidermis, but to be integral parts of the leaf, with a fibro-vascular bundle containing spiral threads (in other words a vein or nerve of the leaf) running through them, and even to be furnished with stomata. The glands excrete at all times when in a healthy condition a white viscous gluten which quickly entraps any small insect that settles upon the leaf, gradually holding it down more and more as it struggles, till escape is hopeless. The glands soon begin to move towards the imprisoned insect; but this movement is not very conspicuous at first, and is very much more decided after the insect has almost completely ceased its struggles; thus appearing not to be due to the existence of a "contractile tissue" in the leaf, which is irritated by the movements of the insect. After the lapse of some time the whole of the glands of the leaf, even those which were at a considerable distance from the insect, are found to be bending over towards it and to be almost in contact with it. After a time the insect is to all appearance digested, actually supplying the tissue of the leaf with nourishment. Very nearly the same effect was produced by substituting for the fly a piece of raw meat, the movement of the glands being somewhat slower, but ultimately almost as complete; the meat being apparently digested in the same manner. On other leaves were placed a minute piece of wood and a small piece of worsted; and in neither of these cases was the least change perceptible after a considerable time in the position of the glands or of the object itself.—A. W. B.

---

*The Spectroscope and its Applications. By J. Norman Lockyer. With colored plate and illustrations. Nature Series. London and New York, Macmillan & Co., 1873. 12mo pp. 117.

In this brief abstract Mr. Bennett does not mention that these movements are pretty well known of late years, since Mr. Darwin called attention to the subject. Indeed they are in this country recorded in elementary books and demonstrated to classes. Probably he is not aware that they were discovered, fully described, and their significance indicated, by Roth, a little less than a century ago. Even the folding over of the leaf, so as to enwrap the insect, to which Mrs. Treat of New Jersey called attention a year or two ago, was observed by Roth. It may now be stated that the remark, in "How Plants Behave," "if a particle of raw meat be substituted for the living fly, the bristles will close upon it in the same manner, but to a particle of chalk or wood they remain nearly indifferent," was made upon Mr. Darwin's authority.—A. G.

VARIETY IN THE FORM OF FLOWERS IN THE SAME SPECIES.—Dr. Hermann Müller of Lippstadt has contributed to a recent number of "Nature" a remarkable paper in which he explains the existence of distinct forms and sizes of flowers, and even of distinct varieties within the same species, by their adaptation to the needs of the insects which are necessary to fertilize them, and which vary according to the position in which the plant grows. The plants especially brought forward by Dr. Müller as illustrations of this law are *Lysimachia vulgaris*, *Rhinanthus Crista-Galli* (including the variety or sub-species *R. major*) and *Euphrasia officinalis.* In each of these cases distinct varieties are well-known, and have even been distinguished by names, varying chiefly in the size and color of the petals, and the relative length of the style and stamens. These distinct varieties Dr. Müller states are generally found in very different situations, and are visited and fertilized by totally distinct insects, for which the construction of the flower is specially adapted. Those characterized by small pale colored flowers grow, as a general rule, in shady situations where they are comparatively little visited by insects, and are very commonly self-fertilized.—A. W. B.

COMPOSITION OF THE PUFF-BALL.—Prof. A. H. Church publishes in a recent number of the "London Journal of Botany," some analyses of the giant puff-ball (*Lycoperdon giganteum*), which resulted as follows:—

Composition of Lycoperdon giganteum.

	When fresh.	When dry.
Water, ...	90 89	——
Fat, oil, and resinous matter,	·90	11·0
Albuminoids, ...	5·48	66·78
Cellulose or fungin, etc.,	2·10	14·78
Ash or mineral matter, .	·63	7·44
	100 00	100·00

Composition of the Ash.

Phosphorus pentoxide, .	46·19
Potash.	35·48
Soda, ...	6·95
Lime.	2·47
Ferric Oxide, ...	1.08
Silica, ...	·66
Other substances and loss, . .	7·17
	100·00

The noticeable points in these analyses are the very large proportion of phosphoric acid in the ash, and of albuminoids or nitrogenous substances in the fresh plant, the latter accounting for the very highly nutritive properties reputed to be possessed by the edible fungi.—A. W. B.

NESÆA VERTICILLATA.—Our species of this genus is somewhat curious. The flowers are dimorphous—Darwin says trimorphous.

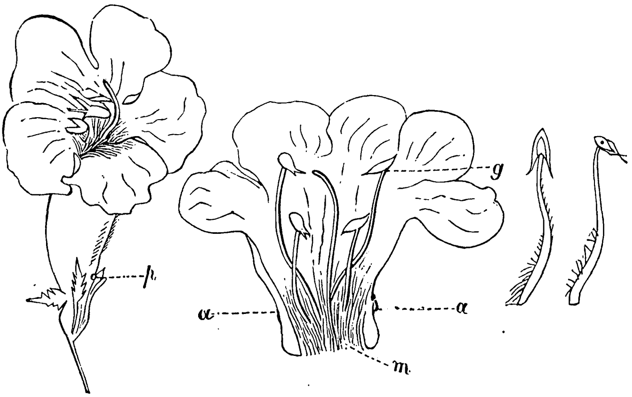
In one pond, or cluster of plants, I find the longer stamens about half the length of the style and twice the length of the shorter ones. In another the style is very short, not more than one-third the length of the shorter stamens, which, in turn, are about one-third as long as the longer ones.

But the root is, perhaps, more curious than the flowers, being very thick, sinuous and knobby, living and growing many years, hard and woody, the bark turning black when cut.— C. W.

Calycera balsamatifolia.— The curious waif of ballast ground near Philadelphia, was determined by the discoverer himself, not by Dr. Leffman, as the latter informs us, at whose request we make the correction of the statement in the Naturalist for October.

Perforation of Gerardia by Bees (see p. 689).—We unfortunately omitted to insert the cut illustrating Mr. Bailey's article on p. 689. The accompanying figure (180) shows the flower as in nature with the point of perforation (*p*); also with the corolla spread open, *a*, aperture; *g*, guiding lines; and a front and side view of a stamen.— Eds.

Fig. 180.



Gerardia perforated by bees.

ZOOLOGY.

Discovery of a Tardigrade.— We are not aware that there is any published notice of the occurrence of tardigrades in this country though undoubtedly microscopists have observed them.